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DEPARTMENT OF THE ARMY  
Fort Detrick  
Frederick, Maryland

The Encephalo-Herpetic Virus Referred to as "Virus B".

by P. Haber

Compt. rend. soc. biol. 87:136-138, 1935.

A. B. Sabin describes (1) a fatal human case of ascending myelitis with visceral necrosis, caused by the bite of a monkey (Macacus rhesus). He studied experimentally the filterable isolated virus, which was able to cause the disease by inoculation into rabbits. His attempts to give the disease to the rhesus in America provided only negative results. However he succeeded in London in infecting some simians belonging to this same species. According to the author, the germ, which he calls "Virus B" belongs to a group quite distinct from all the others studied, even admitting a certain degree of affinity between virus B and the herpetic virus. This virus has established a natural infection among the rhesus in America, a fact which explains, in the author's opinion, the resistant state of these simians toward the inoculation of this virus, while the rhesus in captivity in Europe prove perfectly receptive. An explanation is thus found of the first human case, resulting from the bite of a monkey, which was apparently healthy, but a carrier of "virus B".

We initiated a series of investigations to study the experimental characters and the histopathology of the virus described by the American author.

A. Experimentation: A. B. Sabin kindly agreed to place at our disposal some fragments of marrow and brain containing the virus B (30th passage in rabbits). This had been inoculated into a very large number of rabbits, either intracerebrally or intradermally by scarification of the skin or of the cornea.

Among the animals inoculated intracerebrally, the pathological the pathological symptoms appeared shortly before death. There is a state of meningeal irritation, epileptiform convulsions, and spastic movements. Death follows between the second and ninth day; in short the encephalitic syndrome, described in 1920, with rabbits, by Levaditi and Harvier (2). (Rabbits: 9B, 39B, 60B, 87B, 202B, 219B)

Inoculated intradermally, virus B causes very distinct local reactions: small erythematous papules, with extension of the inflammation over all the scarified surface and the formation of scabs after four to five days, at the same site where the virus was introduced. The neurological manifestations took the form of convulsions, loss of coordination, and finally of paresis or paraplegia, affecting the posterior extremities. Salivation abounds in the preagonal state. The animal succumbs within seven to twelve days (Rabbits: 11B, 12B, 60B, 61B, 206B). The affinity of virus B for the outer skin is then perfectly equatable to the sensibility of the skin toward the herpetic virus, a fact demonstrated since 1921, by Levaditi, Harvier and Nicolan(3).

The introduction of virus B by scarification of the cornea of the rabbit constantly produced a keratosis. The conjunctival sac fills with a purulent serous fluid. The corneal parenchyma takes on a greyish tint, the eye closes completely and the conjunctival pus glues the eyelids. The animal dies between the third and ninth day (Rabbits 13<sup>B</sup>, 14<sup>B</sup>, 71<sup>B</sup>, 54<sup>B</sup>, 59<sup>B</sup>).

Rabbits infected by several nasal instillations also prove receptive of virus B; here death comes on the ninth day.

Several simians, belonging to different species, have been inoculated in various ways. The Macacus cynomolgus 870, inoculated intracerebrally prove non-susceptible to infection with virus B. The same proved true of the Macacus cynomolgus 871, which received three nasal instillation of this virus. However, the Callithrix 897, inoculated intracerebrally three times at two day intervals, died on the eighth day, with signs of encephalitis. The passage of a fragment of brain, intracerebrally, to rabbit 523<sup>B</sup>, caused the death of the animal in six days with the encephalitic syndrome. We have injected intracerebrally (two inoculations at two day intervals) the Macacus rhesus 855, taking absolute care to prove the virulence of the normal saliva by passage on the scarified corneal surface of two rabbits. Negative result. Same failure with the passage of the monkey's saliva after the first and second injection. The rhesus succumbed on the tenth day, without any sign of encephalitis. The same experimental arrangement for the Macacus rhesus 935. Here also the passages of saliva remained completely negative. The monkey is sacrificed on the thirty-sixth day. The passages of his brain to rabbits 250<sup>B</sup> and 251<sup>B</sup> remain without effect. Let us recall that J. Vieuchange (4) has shown that the saliva of normal monkeys does not contain any virus susceptible to produce either keratitis or encephalitis if a rabbit is inoculated by scarification of the cornea. Finally, with the chimpanzee "Mata-Hari", we made some intradermic injections and some scarifications of the phalanges of the left foot. The animal did not show the least sign of encephalitis. The histological examination of his brain did not show any lesion.

B. Histopathology. -- The histological examination of the brain, of the marrow and of the cornea of the rabbits, revealed typical herpes lesions.

Conclusions. -- It is the result of our experiments that no well shown difference can be shown between the virus B and the herpes virus or herpetic encephalitis. The impossibility of contaminating the chimpanzee by cutaneous or subcutaneous inoculation of virus B, in similar conditions as might be possible by a bite, makes us doubt the correctness of the interpretation proposed by A. B. Sabin, namely that the ascending myelitis observed in the human subject was due to contamination by the bite of a rhesus bearing the germ. Furthermore, never did the saliva of nine monkeys, or of the simians inoculated with virus B, prove virulent for the rabbit. For these reasons, we think that it is the case, with the subject in question, of a latent herpetic infection, of which the

awakening and neuraxic localization have been determined by the bite of a normal monkey, which lacked any virus.

Footnotes

- (1) A. B.Sabin. Brit Journ of exper Pathol., 1934, v. 15, no. 6, p. 1.
- (2) Levaditi and Harvier, C. R. de la Soc. de biol., 1921, v. 85, p. 354.
- (3) Levaditi, Harvier and Nicolau, C. R. de la Soc. de biol., 1921, v. 85, p. 287.
- (4) J. Vieuchange, C. R. de la Soc. de biol., 1935, v. 118, p. 512.